

Amendments to the Claims

This listing of claims will replace all prior versions, and listings, of claims in the application:

1-20. (Canceled)

21. (New) A fuel cell comprising:

at least one flow field plate which has at least two flow field paths, which respectively service at least two electrochemical surface areas of the at least one flow field plate, wherein each of the at least two flow field paths has a width, depth, and length dimensioned to provide a molar flow rate of a reactant through said flow field path such that the at least two electrochemical surface areas of the at least one flow field plate have a current density equal to one another.

22. (New) The fuel cell of claim 21, wherein each of said flow field paths have a total flow path resistance such that the molar flow rate, m , of the reactant that enters said flow field paths is determined by the formula:

$$m = (i \times A \times s) / (n \times F)$$

wherein

i = current density of the surface area serviced by said flow field path,

A = electrochemical surface area serviced by said flow field path,

s = fuel utilization efficiency between 0.75 and 1,

n = moles of electrons produced by the fuel cell per mole of the reactant consumed, and

F = Faraday's constant.

23. (New) The fuel cell of claim 21, wherein the electric current density is uniform throughout the at least one flow field plate.

24. (New) The fuel cell of claim 21, wherein the at least two flow field paths are formed of channels of fixed dimensions.

25. (New) The fuel cell of claim 21, wherein the at least two flow field paths are formed of channels of having varying cross-sectional areas.

26. (New) The fuel cell of claim 25, wherein the depth of the channels is constant along the length of the channels.

27. (New) The fuel cell of claim 25, wherein the depth of the channels varies along the length of the channels.

28. (New) A fuel cell comprising:

a first flow field plate which has at least two flow field paths, which respectively service at least two electrochemical surface areas of the first flow field plate;

a membrane electrode assembly; and

a second flow field plate which has at least two flow field paths, which respectively service at least two electrochemical surface areas of the second flow field plate,

wherein each of the at least two flow field paths, for each of the first and second flow field plates, has a width, depth, and length dimensioned to provide a molar flow rate of a reactant through said flow field path such that the at least two electrochemical surface areas of the first and second flow field plates have a current density equal to each other.